

# COMPUTER ENGINEERING

Bachelor of Science in Computer Engineering (BSCP)



## NATURE OF THE WORK

Computer hardware engineers research, design, develop, test, and oversee the manufacture and installation of computer hardware, including computer chips, circuit boards, computer systems, and related equipment such as keyboards, routers, and printers. The work of computer hardware engineers is similar to that of electronics engineers in that they may design and test circuits and other electronic components; however, computer hardware engineers do that work only as it relates to computers and computer-related equipment. The rapid advances in computer technology are largely a result of the research, development, and design efforts of these engineers.

*(compiled from U.S. Dept. of Labor Occupational Outlook Handbook 2010-2011)*

## USF DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING EXPERTISE

Artificial Intelligence	Computer Vision
Knowledge Discovery	Image Analysis
Computer Graphics	Pattern Recognition
Geometric Modeling	Networks

The University of South Florida Bachelor of Science degree programs in Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Industrial Engineering and Mechanical Engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. The Bachelor of Science in Computer Science program at the University of South Florida is accredited by the Computing Accreditation Commission of the Accreditation Board for Engineering and Technology. ABET 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 telephone: (410) 347-7700.

## > EDUCATION REQUIREMENTS > JOB OUTLOOK > SALARY

- A bachelor's degree in computer engineering is required for most entry-level jobs, but some research positions may require a graduate degree.
- Continuing education is critical for engineers in order to keep up with improvements in technology.
- Overall job opportunities for engineers are expected to be good.
- Average starting salary - \$60,112 (*NACE spring 2011*)

## REAL WORLD OPPORTUNITIES

**Co-ops and Internships** – These programs offer students numerous opportunities to engage with the broader-based engineering, technology and science community.

**Engineering EXPO** – This student-run event exposes school children to science and engineering principles in a two-day, on campus event.

**Research Experiences for Undergraduates** – The program gives undergraduate students an opportunity to participate. Students work as Research Assistants with professors and graduate students on a variety of exciting and interdisciplinary research projects.

**Scholarships** – More than 100 scholarships are awarded to USF engineering students totaling more than \$150,000 to provide financial support and recognizing their exceptional efforts.

## STUDENT ORGANIZATIONS

[Association for Computing Machinery](#)  
[IEEE Computing Society](#)  
[Upsilon Pi Epsilon](#)

[Engineers Without Borders](#)  
[Engineers for Sustainable World](#)  
[Student Chapter of the Florida Engineering Society](#)  
[National Society of Black Engineers](#)  
[Society of Hispanic Engineers](#)  
[Society of Women Engineers](#)  
[Tau Beta Pi The Engineering Honor Society](#)  
[Theta Tau](#)



For more information  
<http://outreachrequest.eng.usf.edu>  
[www.eng.usf.edu](http://www.eng.usf.edu)

# UNIVERSITY OF SOUTH FLORIDA COLLEGE OF ENGINEERING

## 2011-12 CURRICULUM

### BACHELOR OF SCIENCE IN COMPUTER ENGINEERING ..... 128 hours

#### Admission to the Department of Computer Science and Engineering

All students must complete the equivalent of USF Composition I & II, Engineering Calculus I & II and calculus-based General Physics I & II (with labs) with a 3.00 overall grade point average in these courses (best attempt) and a minimum grade of "C" in each course to be admitted to the CS&E department. Continuation in the major requires successful completion of CDA 3103 and COP 3514 with a minimum grade of "B" based on best attempts.

The schedule that follows indicates how a diligent student who can devote full time to coursework can satisfy requirements in four academic years. Students without a solid foundation or those who cannot devote full time to academics should plan a slower pace. The following sequence is intended to facilitate registration planning and is subject to change based upon course availability. The sequence may also vary based upon individual considerations. Registration assistance will be provided by academic advisors.

#### FALL SEMESTER - YEAR 1

<b>ENC 1101 Composition I</b> .....	3
<b>MAC 2281 Engineering Calculus I</b> .....	4
CHS 2440 Chemistry for Engineers .....	3
CHS 2440L Chemistry for Engineers Lab .....	1
Foundations of Engineering .....	1
FKL Social & Behavioral Science Elective.....	3
<b>Total</b> .....	<b>15</b>

#### SPRING SEMESTER - YEAR 1

<b>ENC 1102 Composition II</b> .....	3
<b>MAC 2282 Engineering Calculus II</b> .....	4
<b>PHY 2048 General Physics I</b> .....	3
<b>PHY 2048L General Physics I Lab</b> .....	1
<b>COP 2510 Programming Concepts</b> .....	3
<b>Total</b> .....	<b>14</b>

#### FALL SEMESTER - YEAR 2

MAC 2283 Engineering Calculus III .....	4
<b>PHY 2049 General Physics II</b> .....	3
<b>PHY 2049L General Physics II Lab</b> .....	1
<b>COP 3514 Program Design</b> .....	3
FKL Social & Behavioral Sciences Elective .....	3
<b>Total</b> .....	<b>14</b>

#### SPRING SEMESTER - YEAR 2

<b>CDA 3103 Computer Organization</b> .....	3
COT 3100 Intro Discrete Structures.....	3
COP 3331 Object Oriented Design .....	3
MAP 2302 Differential Equations or EGN 3433 Modeling and Analysis of Engineering Systems .....	3
FKL Humanities Elective.....	3
<b>Total</b> .....	<b>15</b>

#### SUMMER SEMESTER

CDA 3201 Computer Logic Design .....	3
CDA 3201L Computer Logic Design Lab .....	1
COP 4530 Data Structures .....	3
EGN 4450 Introduction to Linear Systems .....	2
<b>Total</b> .....	<b>9</b>

With the exception of the courses referred to in the admissions statement above, C- is the minimum acceptable grade in each math, science and engineering course. A minimum GPA of 2.0 in the following categories must be maintained at all times: Overall, USF, Math/Science, Engineering Courses and Specialization Courses.

**Gordon Rule** (6A) is fully met through the mathematics courses above, ENC1101, ENC1102, ENC3246 and CIS4250. Gordon Rule communication requirement is met for any student entering USF with 60 or more hours.

**Exit Requirements:** Exit requirements must be taken at USF. The Capstone Design (CD) and Writing Intensive (WI) exit requirements are met through ENC3246 and CIS4250.

**Course sequence:** Courses in bold should be taken in sequence as early as possible in preparation for your major. Foundation of Knowledge & Learning (FKL) courses may be taken in any order.

#### FALL SEMESTER -YEAR 3

CDA 4205 Computer Architecture .....	3
EEE 3394 Electronics Materials .....	3
EGN 3373 Electrical Systems I .....	3
COT 4400 Analysis of Algorithms.....	3
CSE Elective .....	3
<b>Total</b> .....	<b>15</b>

#### SPRING SEMESTER - YEAR 3

CDA 4203 Computer Systems Design .....	3
CDA 4203L Computer Systems Design Lab.....	1
EGN 3615 Engineering Economics with Social and Global Implications .....	3
COP 4600 Operating Systems .....	3
CSE Hardware Elective .....	3
Natural Science Elective .....	3
<b>Total</b> .....	<b>15</b>

#### FALL SEMESTER - YEAR 4

CDA 4213 CMOS-VLSI Design .....	3
CDA 4213L CMOS-VLSI Design Lab .....	1
EGN 3443 Probability and Statistics for Engineers .....	3
ENC 3246 Communications for Engineers (6A WI) .....	3
FKL Fine Arts Elective .....	3
CSE Elective .....	3
<b>Total</b> .....	<b>16</b>

#### SPRING SEMESTER - YEAR 4

CIS 4910 Senior Project.....	2
4250 Ethical Issues and Professional Conduct (CD) .....	3
FKL Human/Diversity & Global Elective.....	3
FKL Fine Arts Elective.....	3
CSE Hardware Elective.....	3
<b>Total</b> .....	<b>14</b>